OBITUARY.

SELMAR SCHÖNLAND.

August 1860—May 1940.

Schönland at Grahamstown.

When Dr. Selmar Schönland was appointed Curator of the Albany Museum in July 1889, there commenced a new era in the history of the museum, and of botanical science in the Eastern Province. At that time South Africa had not taken its rightful place amongst civilised peoples in the advancement of scientific research. Our primitive conditions in that respect were sufficiently indicated by Dr. Schönland himself in 1908: "When I first came, there was scarcely a first-class microscope in the country, with the possible exception of some in the hands of medical practitioners. I am pretty safe in stating that there was no public institution owning one. The South African Museum in Cape Town, the Cape Government Herbarium and the Albany Museum in Grahamstown were the only public institutions in South Africa where Natural Science from a scientific point of view was cultivated, and there were only a few enthusiasts supporting these institutions, which were tolerated rather than looked upon as a concomitant of civilised life. The teaching of Zoology had never been attempted. The teaching of Botany had been attempted at the South African College by Prof. MacOwan, but had been given up. In a few schools, botany was taught from English text-books with the usual terrible results." In those days, children were taught much about primroses and skylarks, but nothing about Aloes and Proteas!

He came from the small town of Frankenhausen in Germany, and received his higher education and doctor's degree at Kiel University. At Kiel, the Professor of Botany was A. Engler, the taxonomist who became a great authority on the African Flora. There, Schönland won a prize (£30, the biggest prize then obtainable in any German University), as well as the degree, for his essay "On the structure and development of the flowers and fruits of Plane trees." Later on, a small share in Engler's great work "Die Naturlichen Pflanzenfamilien" was entrusted to him. After teaching Science for a year at Aschersleben, he took a museum post in the Agricultural College at Berlin, where fine laboratories and an experimental garden were available.

In 1886, by invitation of Prof. Bayley Balfour, he went over to Oxford as Curator in the Fielding Herbarium. There he demonstrated and coached in Botany, and also lectured in the absence of the professor; a contribution of permanent value to the University, through his new methods of technique in botanical microscopy—he was the first to introduce serial section-cutting with the microtome into botanical science. From the University he received an honorary degree (M.A.) which he much valued.

At this period he collaborated with Messrs. E. B. Poulton and A. E. Shipley in preparing the English translation of one of Weismann's books, "Essays upon Heredity," etc., a work that greatly influenced the biological philosophy of the period. He also helped Sir John Lubbock in the preparation of sections for the microscope, and frequently stayed with him at Farnborough.

Thus, he came to Grahamstown as a trained biologist of some standing. In those days the Albany Museum was very immature: but there was a progressive managing committee under Dr. W. G. Atherstone as Chairman. The new curator—salary £200 per annum—had ambitious schemes, which aimed at nothing short of a new building, new cases and a new collection, and he strove to make it a living centre of biological research. All these things in due course materialised: he imported skilled taxidermists to mount the mammals and birds of the country; and, after years of hard work and the necessary tactful representations, he induced a sympathetic government to vote sufficient money for the construction of a new building and of new cases. The building was brought into use early in the year 1900: the teak cases, locally made and all very serviceable, gave a distinctive character to this museum, and many of them are still much admired.

All the time he was methodically building up a very important botanical collection. He was indeed creator of the herbarium, although its foundations can be traced to his father-in-law, Prof. P. MacOwan. In 1889 it was a mere nucleus of less than 1,000 sheets: in 1926 when he retired, there were more than 100,000 sheets of South African flowering plants, all fully classified and identified by eminent authorities. It includes many specimens collected by the early botanists—about 700 sheets of Wm. Burchell, many type specimens of Ecklon and Zeyher, a most important collection of P. MacOwan, and a very large set collected by R. Schlechter. The development of this herbarium is described in R. A. Dyer's recent book on the "Vegetation of the Divisions of Albany and Bathurst."

In addition to the multifarious duties of a curator, there was ever-increasing correspondence, both on purely scientific and on practical

subjects such as plant diseases and insect pests. In 1891 he conducted experiments with Mr. Tidmarsh on the breeding of the ladybird Rodolia iceryiae that preys on Australian bug: in 1892 he studied rust in wheat at the request of Mr. J. X. Merriman, the Treasurer-General: in 1894, again at Government request, he reported on the development of fisheries at Port Alfred: in 1900 he investigated a pineapple disease in Lower Albany for the Agricultural Dept.; and in 1908—1909 he gave good advice on Plasmopara in vines, a pest which greatly agitated the minds of many wine farmers, faced with ruin as they feared. Later on he became increasingly concerned over the problems of weeds. He urged the need for Government aid in eradicating jointed cactus, prickly pear and other tenacious types that vitally affect the productivity of the the land. In 1923—1926 he carried out an experiment for the Agricultural Department "On the reclamation of ruined Pasturage on the Amatolas near Keiskama Hoek," where, through overstocking, previously excellent pasturage had become covered to an alarming extent by the grey everlasting known locally as Helichrysum weed. In the foreword to the publication, the Chief of the Division of Botany wrote: "The article contains results of a piece of research work which has been carried out under the aegis of the Botanical Survey during the last few years by Dr. Schönland. It shows conclusively how large tracts of waste country on the Amatolas can be converted into good pasturage, if the methods advocated by Dr. Schönland are adopted."

From the beginning, he strove to extend the educational function of the Museum. He lent material to the schools, gave lectures to the teachers on botanical matters; to farmers about noxious and useful animals; to the members of the E.P. Literary and Scientific Society; and to the nurses of the Albany Hospital "On some lower organisms which are of importance in connection with hospital work." He wrote to the newspapers, condemning the enormous slaughter of small birds then occurring, and he also urged a more scientific approach to the problem of vermin control by farmers—various unfortunate animals, such as Manhaar Jackals, being then in grave danger of extermination, through gross misunderstanding. In 1896 he drew up what was probably the first list of Eastern Province birds that should be protected; and it is recorded that seven municipalities and two divisional councils expressed their sympathy with the recommendations.

In 1910 Dr. Schönland resigned his post as Director of the Museum, remaining as Curator of the Herbarium until 1926. In 1917 he took a leading part in planning the Botanical Survey of South Africa, being a Foundation Member of the Survey Committee. Our botanical collection then became one of the regional herbaria of the Survey, and a botanist

has been provided by the Survey authorities for its management, although the Museum Board has retained ownership.

From the year 1893 onwards, he was a member of successive committees which strove towards the ideal of University facilities in Grahamstown, and whose labours were rewarded by the establishment in 1904 of Rhodes University College. As the Master of the College has recently stated : " Few now realise how great a part he played. When enthusiasm waned in the face of difficulties he never faltered ; working unobtrusively behind the scenes, he tackled the difficulties and showed how they could be overcome. Through the late Mr. Justice Sampson he approached the Prime Minister, Dr. Jameson, and obtained from him a promise of an Act of Incorporation for the new College ; at the same time, reason was given to hope that the Rhodes Trustees would help it with a substantial grant. When unexpected difficulties arose, it was Dr. Schönland who journeyed to Cape Town, persuaded the Prime Minister to push on with the Act and convinced Sir Lewis Michell, who managed the financial affairs of the Rhodes Trustees that the new venture was worthy of their strong support." Appropriately therefore, in 1904 he was nominated by Government to membership on the newly formed College Council ; and in 1905 he became its first Professor of Botany. In the lecture room he was able and lucid : in the laboratory he stressed the other vital function of a true University, that of extending knowledge.

Eventually he built up a strong department, and earned for it a high reputation throughout the country. His students now occupy responsible positions as teachers, research workers, and Government officials in all parts of South Africa and beyond.

He also functioned with great ability as Chairman of the Building Committee and under his direction the early buildings both tutorial and residential arose.

In those early days when the future of the College seemed somewhat uncertain, there was active co-operation between the Museum and College, whereby the Professors of Botany, Geology (E. Schwarz), and Zoology (J. E. Duerden) were also employed at the Museum. This arrangement, planned 5 years earlier by Dr. Schönland, worked quite well until 1910, by which time the rapid growth of the College made it impracticable.

For years he served the old Cape University as a member of the Council, and also as examiner in Botany—in the latter capacity thus making early acquaintance with our present Prime Minister.

For several years also he was a member of the Grahamstown School Board, having been appointed thereto by Government in 1906, when the School Board Act came into force.

In 1927 he retired to his farm Aylesby near Grahamstown, and there

was mutual honour on his appointment by the College as Emeritus Professor. He gradually gave up investigational work, but for seven years still continued to serve the public interest as a much respected member of the Albany Divisional Council.

He had correspondents and friends throughout the world of science, and was a member of various scientific societies here and abroad—foundation member of the South African Association for the Advancement of Science, first member of its council for Grahamstown (1903), Vice-President of the section for Anthropology at the Johannesburg meeting with the British Association in 1905, and President of the section of Botany and Zoology in 1908. He was a Fellow of the Royal Society (S. Africa) and Corresponding Member of the Zoological Society of London.

Dr. Schönland's period of office in Grahamstown must always be considered one of very remarkable enterprise. He was essentially a scientist, but did not pursue his interests in a selfish way ; a fearless critic, who tempered his logic with humour ; a man of strong personality, who sought and followed truth and who had a meticulous respect for agreements.

J. Hewitt.

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SCHÖNLAND AND SOUTH AFRICAN SYSTEMATIC BOTANY.

Schönland's place among those who have worked at systematic botany in South Africa is distinctive : he was the first botanist with publications in this branch of botanical science to his credit before leaving Europe ; and the Bibliography, besides giving the wide range of the subjects treated by him, indicates that most of the brief leisure an otherwise extremely interesting and active life could afford was undauntedly devoted to the continuance of the systematic work he had begun in Germany and England.

The most striking example of this persistence in a task involving much labour and bristling with difficulties was his faithful adherence throughout his professional career to the *Crassulaceae*. He had contributed an account of it to Engler and Prantl's *Natürliche Pflanzenfamilien*, in accordance with the requirements of that work, and soon after his arrival in South Africa he turned his attention to the large genus, *Crassula*, stimulating collectors all over the country, and emphasising from the outset the importance of using living material for investigation. Taking Harvey's account in the *Flora Capensis* as a starting-point, and " ignoring, with Harvey, all incompletely characterised species of older authors,"

he found more than a hundred species were known. As a result of Schönland's efforts this number grew steadily larger—many new species were discovered and old ones rediscovered and localised, and the genus was before long on the high-road to a monograph. An important stage on the way was reached with the publication of the *Tillaeoideae*, a section created by Schönland to include *Tillaea* and several other genera consisting " of small, mostly annual plants adapted in the majority of cases to damp conditions (some are real water plants) while some are distinct Xerophytes." " It looks," he adds, " almost as if these small-flowered species had formed the original stock from which the other *Crassulas* more or less directly originated." A great number of collections are quoted and Latin descriptions are given of the 36 species enumerated. Text-figures are supplied from Schönland's drawings depicting a sepal, petal, stamen, carpel, and nectary-scale of 16 species, and 26 species are illustrated by reproductions of excellent photographs of herbarium specimens made by Dr. J. Hewitt.

A complete monograph that would have satisfied the aspirations of Dr. Schönland was never written. But we are left with an invaluable substitute which still remains the only comprehensive work on the genus and is indispensable to all who struggle with the determination of the South African *Crassulae*, as well worn herbarium-copies so eloquently testify. This is the extensive paper which appeared in 1929 entitled " Materials for a Critical Revision of Crassulaceae (The South African Species of the Genus *Crassula* L. (emend. Schönl.).)." Here he expresses the view " that even now the time is not ripe for a monograph of the genus, although for many years I have studied living specimens in which I have been greatly helped by all South African botanists. His main objects as stated in this paper are : " (1) to arrange the known South African species of *Crassula* into, what I consider to be, natural groups with hints on their possible phylogeny ; (2) to give their geographical distribution; (3) to unravel the complicated synonymy." In wrestling with the last Schönland must often have sounded the depths of despair. " I may claim," he writes, " to have made considerable progress with it." More than 20 new species are described, and there are very useful keys to the 226 species included in the work. This total might easily have been much greater ; for Schönland owns to being " a lumper," giving fair warning in his statement that " many botanists would have made 10—12 species of the forms I have placed under *C. rubicunda*." One botanist at least considers the caution amply justified !

More or less contemporaneously with the study of *Crassula* living collections of *Cotyledon* were constantly passing through Schönland's hands, and in 1915, following on an earlier paper in collaboration with

E. G. Baker, he decided to publish the results of these observations, his chief aim being to "group the known species as naturally as possible." The 40 species comprising the genus at that time are arranged under 2 sections in 13 groups, each group bearing the name of its oldest or most characteristic species. This account of the genus, with its keys to all the species, received a warm welcome, and, although a good deal of work on *Cotyledon* has been done since by others, it still holds its high place and serves a useful purpose.

About this time Schönland's interest in *Cyperaceae* began, and in 1922 his *Introduction to South African Cyperaceae* was published under the auspices of the Botanical Survey of South Africa. In order to give the beginner a good start he had "every genus mentioned in the *Flora Capensis* and as far as possible every section of the larger genera" illustrated. There are as many as 80 full-size plates, representing as many species, reproduced from Miss Gower's faithful drawings. All the collections examined of each species are quoted with their localities, and a description is added of all the genera. Ample morphological notes are given which, of necessity, were either very briefly stated or altogether omitted from the *Flora Capensis*.

In 1930 the monograph on the South African species of *Rhus* appeared. This important work, dealing with 66 species, is profusely illustrated, and may be considered the most complete of Schönland's productions. Previous accounts of this widely distributed and extremely variable genus had been based largely upon herbarium material which was frequently inadequate. Schönland had the advantage not only of being able to study many of the species in the field, but also of getting abundant living material from foresters in different parts of the Union, so that an enormous number of collections was examined. It is this intimate contact with the living plant that makes the discussions and notes on various points such interesting reading. The species are divided into groups of closely related forms, as was done in the Cotyledon-paper, each group being again called after its leading species.

More than 40 years ago Schönland was attracted by *Aloes* and was growing them in his own garden, where he was able to make observations in ideal conditions. Here, at the time his first paper on this subject was published, he had plants representing "nearly 40 species thriving in the open." During the period between the publication of Baker's monograph in the *Flora Capensis* in 1896 and Schönland's first paper in 1903 little or nothing had been done with South African *Aloes*. Half the number of species quoted in the former monograph were without a single locality, and Schönland expresses the great hope that "with the assistance of all those interested in Botany in South Africa our present lamentably

deficient knowledge of the geographical distribution of these plants, which form such an important feature of the Flora of South Africa" would be greatly enlarged "and that the large number of new species hitherto undescribed would be brought to light." One rejoices in the thought that, after he had himself described a number of new species and added to our knowledge of the old ones, he lived to see his hopes fully realised—that he saw the gorgeous rockeries in Pretoria which resulted from Dr. Pole-Evans' work on the genus, and that he knew of the magnificent success that has crowned the untiring efforts of Mr. G. W. Reynolds. For Schönland was always generous in his appreciation of the work of other botanists and generous, too, in his acknowledgments of the help given to him by his assistants, colleagues, and the friends whom he encouraged and inspired by his own example and co-operation.

L. Bolus.

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PLATE XXIV.

SELMAR SCHÖNLAND (1910).